

Table MM.1 Adult mortality rates

Direct estimates of female and male mortality rates for the seven years preceding the survey, by five-year age groups, [Country Survey Year]

Age	Deaths	Exposur e years	Mortality rates ¹
FEMALE			
15-19	38	26,99642	
20-24	52	26,05199	
25-29	51	20,32749	
30-34	68	17,24797	
35-39	28	14,91785	
40-44	33	10,43216	
45-49	18	5,93706	
Total 15-49	288	121,92735 ^a	
MALE			
15-19	47	28,50365	
20-24	23	27,18085	
25-29	46	21,45912	
30-34	30	17,73467	
35-39	32	15,02211	
40-44	36	10,53939	
45-49	24	6,18895	
Total 15-49	237	126,62502 ^a	

¹ Expressed per 1,000 population

^a Age-adjusted rate

Confidence limits: The confidence limits should be included in a table in the sampling error appendix (see sampling error table below). Reference the confidence intervals (CIs) in discussing the 5-year age group rates. Precision for the 5-year age group rates is low, and the CIs for many of the rates may overlap, indicating there is likely no statistically significant difference between them. Review the discussion below figure MM.2 for more information on comparing rates and confidence intervals.

Figure MM.1 Adult Mortality Rates by Age

Deaths per 1,000 population

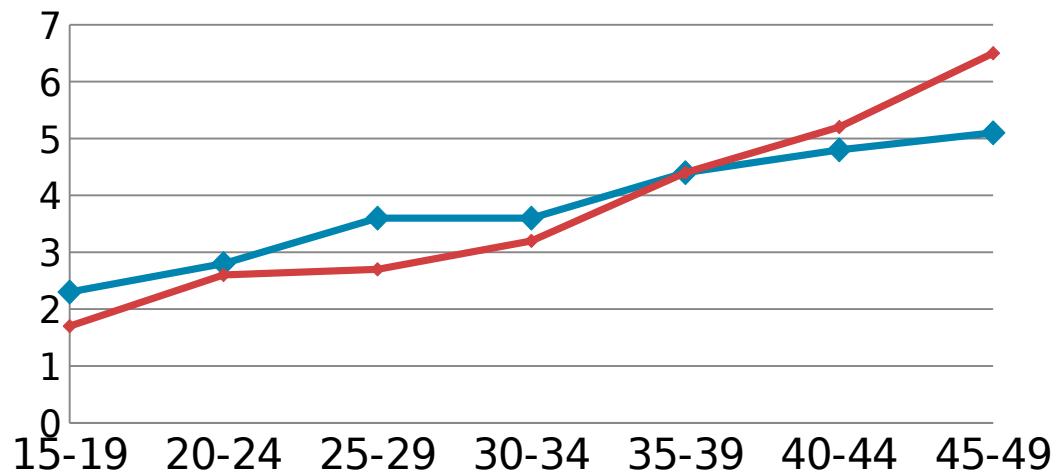


Table MM.2 Adult mortality probabilities		
	Women	Men
Survey	${}_{35}q_{15}^1$	${}_{35}q_{15}^1$
[Current yyyy country]DHS	159	209
[Prior yyyy country]DHS	159	209

¹ The probability of dying between exact ages 15 and 50, expressed per 1,000 persons at age 15

- Row 1: The probability of dying between exact ages of 15 and 50 for women (based on sisters reported by female respondents in the Adult and Maternal Mortality Module) and for men (based on brothers reported by female respondents in the Adult and Maternal Mortality Module).
- Row 2: This row will be shown only when a prior country survey included the Adult and Maternal Mortality Module. It shows the probability of dying between exact ages of 15 and 50 among women (based on sisters reported by female respondents in the Adult and Maternal Mortality Module from the prior survey) and among men (based on brothers reported by female respondents in the Adult and Maternal Mortality Module from the prior survey).

Confidence limits: The confidence limits for ${}_{35}q_{15}$ for women and men for the current survey (and the prior survey if applicable) should be included in a table in the sampling error appendix. When comparing rates for women and men or across surveys, refer to the confidence intervals to see if there are significant differences. Review the discussion below figure MM.2 for more information on comparing rates and confidence intervals.

Table MM.3 Maternal mortality

Direct estimates of maternal mortality rates for the seven years preceding the survey, by five-year age groups, [Country Survey Year]

Age	Percentag e of female deaths that are maternal	Maternal deaths ¹	Exposure years	Maternal mortality rate ²
15-19	21.1	8	26,996	0.29
20-24	42.3	22	26,051	0.86
25-29	47.1	24	20,387	1.20
30-34	47.1	32	17,247	1.84
35-39	42.9	12	14,917	0.84
40-44	45.5	15	10,412	1.44
45-49	33.3	6	5,917	1.03
Total 15-49	41.7	120	121,92 7	0.96 ^a

¹A maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, from any cause except accidents or violence

² Expressed per 1,000 woman-years of exposure

^a Age-adjusted rate

DHS-7 follows the WHO definition of a maternal death: “a maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes”.¹

The percentage of female deaths that are maternal equals the number of maternal deaths in column 2 of MM.3 divided by the number of adult female deaths in column 1 of MM.2, expressed as a percentage.

¹ <http://www.who.int/healthinfo/statistics/indmaternalmortality/en/>

Table MM.4 Maternal mortality ratio

Total fertility rate, general fertility rate, maternal mortality ratio, and lifetime risk of maternal death for the seven years preceding the survey, [Country Survey Year]

Total fertility rate (TFR)	6.2
General fertility rate (GFR) ¹	172
Maternal mortality ratio (MMR) ²	557 CI: (X, Y)
Lifetime risk of maternal death ³	0.034
CI: Confidence interval	
¹ Age-adjusted rate expressed per 1,000 women age 15-49	
² Expressed per 100,000 live births; calculated as the age-adjusted maternal mortality rate (shown in Table MM.3) times 100 divided by the age-adjusted general fertility rate	
³ Calculated as $1 - (1 - \text{MMR})^{\text{TFR}}$ where TFR represents the total fertility rate for the seven years preceding the survey	

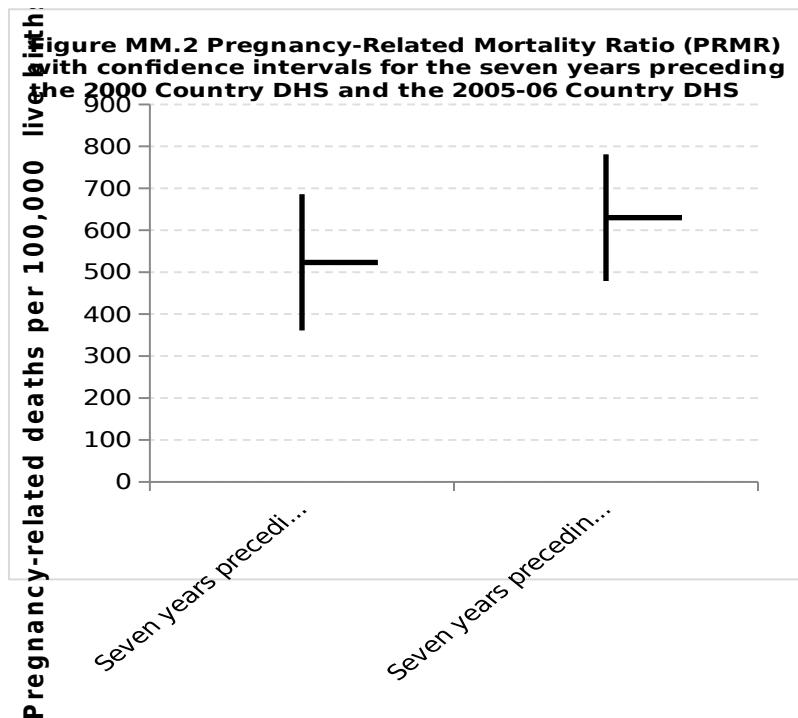
The lifetime risk of maternal death is calculated from the MMR using the formula given in the footnote. It is interpreted as the risk of a woman with average fertility dying during pregnancy, childbirth or in the 42 days following a birth throughout the course of her reproductive life. It is expressed as a proportion in the table. For example, a lifetime risk of 0.034 indicates that out of every 100 women, 3.4 (or 3 percent) will have a maternal death. It may be useful to include the percentage and/or the inverse of the proportion in the text for ease of interpretation. For example, a proportion of 0.034 is equivalent to 1 in 29 women.

Confidence limits: The confidence limits for the 5-year age group rates, the total maternal mortality rates, and the maternal mortality ratio (MMR) should be included in a table in the sampling error appendix. Note that the confidence intervals for the 5-year age group maternal mortality rates are likely to be especially wide relative to the rate itself. Confidence intervals for many of the 5-year rates are likely to overlap, especially in the older age groups. If you choose to discuss the 5-year maternal mortality rates in the text, refer to the confidence intervals when deciding how to interpret them. Review the discussion below figure MM.2 for more information on comparing rates and confidence intervals.

For countries with measurements of the MMR from previous DHS surveys, comparison should not be made using the revised table MM.3 above, but using appendix table C.10 which estimates pregnancy-related mortality in the same way MMR was estimated in surveys prior to DHS-7. The report should include Figure MM.2 (below), and the text must include a discussion of whether or not the

observed difference can be interpreted as a change in the level of pregnancy-related mortality.

The reference periods before each estimate should be the same length. The approximate calendar years included in the reference period should be noted in the figure. If a previous survey included the maternal mortality chapter, but no confidence limits were published, the confidence limits for the previous survey must be calculated and included. Include estimates for all surveys for which data are available.



There are three possible outcomes when comparing confidence intervals:

- 1. The confidence intervals do not overlap.** In this case, the difference between the estimates is statistically significant, i.e., that the pregnancy-related mortality ratio has increased/decreased.
- 2. The confidence intervals overlap to the extent that either confidence interval encompasses the point estimate of the other survey.** In this case, the difference between the estimates cannot be statistically significant. We conclude that the survey has not detected a change. Note that this is not the same as saying that the survey concludes there has been no change. There could be a change that was too small to be detected by the survey. Even with their large sample sizes, DHS surveys are able to detect only large changes in the maternal mortality ratio.
- 3. The confidence intervals overlap, but neither confidence interval includes the point estimate of the other survey (only the tails overlap).** In this case, it is not possible to determine whether or not the difference between the

two estimates is statistically significant based on the confidence intervals. The sampling statistician for the survey will need to perform a test to determine whether the difference is statistically significant. The sampling statistician will give you the confidence interval for the difference between the pregnancy-related mortality ratios of the two surveys. The difference between the ratios is the simple arithmetic difference between the point estimates of the two surveys. In the example above, the difference would be 107 pregnancy-related deaths per 100,000 live births. If the confidence interval for the difference does not include zero, then the difference between the two surveys is statistically significant. If the confidence interval for the difference includes zero, then the difference between the two surveys is not statistically significant. Include the difference and the confidence level for the difference in a footnote in the chapter, as recommended in options 3a and 3b below.

The formulas being used assume that the surveys being compared were drawn from independent samples, and, most of the time, two consecutive DHS surveys will have independently selected samples. In the event that this is not true, for example if a second survey purposively included clusters from the prior survey or if both surveys were selected from the same master list of clusters (if the master list includes a sample of all of the clusters in the country), consult with your sampling statistician because different formulas must be used to test whether or not a difference is statistically significant when samples are not independent.

The following section includes example text to include in the final report chapter for all of the possible outcomes described above.

1. The confidence intervals do not overlap.

"As shown in Figure MM.2, there is no overlap between the confidence intervals surrounding the estimates of the pregnancy-related mortality ratio (PRMR) for the [yyyy country] DHS and the [yyyy country] DHS. The difference between the yyyy and yyyy estimates of the PRMR is statistically significant and not likely to be due to sampling error. Therefore, it can be concluded that the PRMR has [increased/decreased] between the yyyy and yyyy surveys."

2. The confidence interval from either survey encompasses the point estimate from the other survey.

"As shown in Figure MM.2, the confidence intervals for the maternal mortality ratio (MMR) for the [yyyy country] DHS and the [yyyy country] DHS overlap. The confidence interval for the [yyyy country] DHS spans the point estimate of the PRMR in the [yyyy country] DHS [or vice versa]. The difference between the yyyy and yyyy estimates of the PRMR is not statistically significant. Any change that may have occurred between the two surveys was not large enough to be significant with the sample sizes of the surveys."

3a. The confidence intervals overlap, and the statistical test concluded the difference is statistically significant.

"As shown in Figure MM.2, the confidence intervals for the pregnancy-related mortality ratio (PRMR) for the [yyyy country] DHS and the [yyyy country] DHS overlap. Because it is still possible for a difference to be statistically significant even if the confidence intervals overlap, a statistical test of significance was conducted. The test concluded that the difference between the yyyy and yyyy estimates of the PRMR is statistically significant and not likely to be due to sampling error¹. Therefore, it can be concluded that the PRMR has [increased/decreased] between the yyyy and yyyy surveys."

Footnote for 3a:

"¹The difference in the PRMR between the two surveys is X deaths per 100,000 live births. The confidence interval for this difference is (Y, Z). The confidence interval does not include zero, indicating that the difference between the two estimates is statistically significant."

3b. The confidence intervals overlap, and the statistical test concluded that the difference is not statistically significant.

"As shown in Figure MM.2, the confidence intervals for the pregnancy-related mortality ratio (PRMR) for the [yyyy country] DHS and the [yyyy country] DHS overlap. Because it is still possible for a difference to be statistically significant even if the confidence intervals overlap, a statistical test of significance was conducted. The test concluded that the difference between the estimates of the PRMR for the yyyy and yyyy surveys is not statistically significant. Any change that may have occurred between the two surveys was not large enough to be statistically significant with the sample sizes of the surveys."

Footnote for 3b:

"¹The difference in the PRMR between the two surveys is X deaths per 100,000 live births. The confidence interval for this difference is (Y, Z). The confidence interval includes zero, indicating that the difference between the two estimates is not statistically significant."

This table will be produced by the sampling statistician, and will be placed at the end of the sampling error appendix after the regional tables.

Table B.? Sampling errors for adult and maternal mortality rates, [Country Survey Year]

Variable	Value (R)	Standar d Error (SE)	Number of cases		Design Effect (DEFT)	Relative Error (SE/R)	Confidence limits					
			Un- weighte d (N)	Weighte d (NW)			Lower (R-2SE)	Upper (R+2SE)				
WOMEN												
Adult mortality rates												
15-19												
20-24												
25-29												
30-34												
35-39												
40-44												
45-49												
15-49 (age-adjusted)												
Adult mortality probabilities												
${}_{35}q_{15}$ [survey year]												
${}_{35}q_{15}$ [prior survey year]												
Maternal mortality rates												
15-19												
20-24												
25-29												
30-34												
35-39												
40-44												
45-49												
15-49 (age-adjusted)												
Maternal mortality ratio (MMR) [year]												
Pregnancy-related mortality ratio (PRMR) [year]												
Pregnancy-related mortality ratio (PRMR) [prior survey year]												
MEN												
Adult mortality rates												
15-19												
20-24												
25-29												
30-34												
35-39												
40-44												
45-49												
15-49 (age-adjusted)												
Adult mortality probabilities												
${}_{35}q_{15}$ [survey year]												
${}_{35}q_{15}$ [prior survey year]												

Table C.8 Completeness of information on siblings

Completeness of data on survival status of sisters and brothers reported by interviewed women, age of living siblings and age at death (AD) and years since death (YSD) of dead siblings (unweighted), [Country Survey Year]

	Sisters		Brothers		All siblings	
	Number	Percent	Number	Percent	Number	Percent
All siblings						
Living						
Dead						
Survival status unknown						
Living siblings						
Age reported						
Age missing						
Dead siblings						
AD and YSD reported						
Missing only AD						
Missing only YSD						
Missing AD and YSD						

Working table. Completeness of information for dead sisters

Percentage of sisters who died at ages 15-49 with information missing on whether or not the death was pregnancy-related or maternal (unweighted), [Country Survey Year]

Percent
Deaths that could not be classified as pregnancy-related or non-pregnancy-related
Deaths that could not be classified as maternal or non-maternal
Total number of sisters who died at ages 15-49

Note: Restricted to sisters who died during the seven years preceding the survey.

Deaths that could not be classified as pregnancy-related or non-pregnancy-related are deaths with missing information on whether the deaths were during pregnancy, during delivery or in the two months following the termination of the pregnancy. *Deaths that could not be classified as maternal or non-maternal* include all deaths that cannot be classified as pregnancy-related or non-pregnancy-related, but also include deaths with missing information on whether the death was due to accidental or incidental causes and deaths with missing information on whether or not the death was within 42 days of the termination of pregnancy.

Table C.9 Sibship size and sex ratio of siblings

Mean sibship size and sex ratio of siblings at birth,
[Country Survey Year]

<u>Age of respondents</u>	<u>Mean sibship size¹</u>	<u>Sex ratio of siblings at birth²</u>
15-19		
20-24		
25-29		
30-34		
35-39		
40-44		
45-49		
Total		

¹ Includes the respondent

² Excludes the respondent

Table C.10 Pregnancy-related mortality trends
Direct estimates of pregnancy-related mortality rates for the seven years preceding each survey, by five-year age groups, [Country]

Age	Pregnancy-related mortality rates ^{1,2}			
	[xxxx-yyyy]	[xxxx-yyyy]	[xxxx-yyyy]	[xxxx-yyyy]
15-19	0.33	x.xx	x.xx	x.xx
20-24	0.97	x.xx	x.xx	x.xx
25-29	1.35	x.xx	x.xx	x.xx
30-34	2.07	x.xx	x.xx	x.xx
35-39	0.94	x.xx	x.xx	x.xx
40-44	1.62	x.xx	x.xx	x.xx
45-49	1.16	x.xx	x.xx	x.xx
Total 15-49 ^a	1.08	x.xx	x.xx	x.xx
Total fertility rate (TFR)	6.2	x,x	x.x	x.x
General fertility rate (GFR) ³	172	xxx	xxx	xxx
Pregnancy related mortality ratio (PRMR) ⁴	630	xxx	xxx	xxx
Confidence interval	(479-781)	(X-Y)	(X-Y)	(X-Y)
Lifetime risk of pregnancy-related death ⁵	0.038	x.xxx	x.xxx	x.xxx

¹ Pregnancy-related mortality is defined as the death of a woman while pregnant or within 2 months of termination of pregnancy, from any cause including accidents or violence

² Expressed per 1,000 woman-years of exposure

³ Age adjusted rate expressed per 1,000 women age 15-49

⁴ Expressed per 100,000 live births; calculated as the age-adjusted pregnancy-related mortality rate times 100 divided by the age-adjusted general fertility rate

⁵ Calculated as $1 - (1 - \text{PRMR})^{\text{TFR}}$ where TFR represents the total fertility rate for the seven years preceding the survey

^a Age-adjusted rate

To compare with prior estimates from DHS surveys, DHS-7 defines a pregnancy-related death as the death of a woman while pregnant or within 2 months of termination of pregnancy, irrespective of the cause of death. Note that this definition varies from the WHO definition of a pregnancy-related death, which limits the window to 42 days. What is defined as a pregnancy-related death in DHS-7 was labeled as a maternal death in prior DHS surveys.